



**RESEARCH CONFERENCES**

# Self-Assembly of Guanosine Derivatives: From Biological Systems to Nanotechnological Applications

Universitätszentrum Obergurgl (Ötz Valley, near Innsbruck) • Austria  
20-25 June 2009

Chair: **Gian Piero Spada**, University of Bologna, IT

Co-Chairs: **Irena Drevensek-Olenik**, University of Ljubljana, SI;  
**Lea Spindler**, University of Maribor, SI

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# Programme

## Saturday 20 June 2009

from 16.00 Registration at the ESF-RC desk  
19.00-20.30 Welcome & dinner

## Sunday 21 June 2009

08.30 Conference Opening  
Chairs' Welcome Gian Piero Spada

### Session 1A *Synthesis and supramolecular structures*

Chair: Mateus Webba da Silva, University of Ulster, Coleraine, UK

08.45-09.30 (invited) **Gang Wu**  
Queen's University, Kingston, CA  
*Guanosine 5'-Monophosphate Self-Assembly: 100 Years Later*

09.30-09.55 **Julian Huppert**  
University of Cambridge, UK  
*Computational and experimental analyses of G-quadruplex formation, stability, location and function*

09.55-10.20 **Linda Payet**  
University of Cambridge, UK  
Multifolding states of 2 putative G-quadruplex sequences and Effect of free polymer on Stability of I-Motifs

10.20-10.40 Coffee break

10.40-11.25 (invited) **Mihail D. Barboiu**  
Institut Européen des Membranes, Montpellier, FR  
*Constitutional G-quadruplex self-assembly toward functional supramolecular materials*

11:25-12:10 (invited) **Koji Araki**  
University of Tokyo, JP  
*How to design hydrogen bond-directed supramolecular materials of guanosine derivatives? An indirect approach toward supramolecular vesicles*

12:10-12:35 **Andrew Marsh**  
University of Warwick, UK  
*Controlling guanosine assembly with synthetic receptors*

12:35-15:00 Lunch break

## Session 1B *Synthesis and supramolecular structures*

Chair: Koji Araki, University of Tokyo, JP

- 15.00-15.45 (invited) **Nadezda Spackova**  
Institute of Biophysics, Brno, CZ  
*Computer Simulations on Guanine Quadruplexes – Focused on Loops*
- 15:45-16:10 **Nason James Ma'ani Hessari**  
University of Ulster, Coleraine, UK  
*The Design of Quadruplex Topologies with High Thermodynamic Stability*
- 16:10-16:35 **Akos Banyasz**  
CEA-CNRS, Gif-sur-Yvette, FR  
*Time-resolved studies of guanine quadruplexes*
- 16.35-17.00 Coffee break

## Poster session I

Chair to be announced

- 17.00-19.00 Flash presentations and poster discussion
- 19:30-21:00 Dinner break
- 21.00-23:00 Free discussion

## Monday 22 June 2009

## Session 1C *Synthesis and supramolecular structures*

Chair: Gang Wu, Queen's University, Kingston, CA

- 08.30-09.15 (invited) **Mateus Webba da Silva**  
University of Ulster, Coleraine, UK  
*Control of Quadruplex Self-Assembly*
- 09.15-09.40 **Amy Webber**  
University of Warwick, UK  
*Probing self-assembly and hydrogen bonding in deoxyguanosine derivatives using high-resolution Solid-State NMR techniques*
- 09.40-10.05 **Miha Devetak**  
Jozef Stefan Institute, Ljubljana, SI  
*Comparative study of surface organization of amphiphilic guanosine*

- 10.05-10.30 *derivatives with Langmuir-Blodgett technique and atomic force microscopy*  
Coffee break
- 10.30-11.15 (invited) **Anh Tuan Phan**  
Nanyang Technological University, Singapore, SG  
*Structure and interaction of G-quadruplexes*
- 11:15-12:00 (invited) **Paolo Samorì**  
Université de Strasbourg, FR  
*The nanochemistry of surfaces and interfaces: mastering the supramolecular approach*
- 12:00-12:25 **José M. Rivera**  
University of Puerto Rico at Río Piedras, PR  
*Adventures in Supramolecular Space using 8-Arylguanine Derivatives*
- 12:30-15:00 Lunch break

## Session 2A: **Biological Systems**

Chair: Antonio Randazzo, Università degli Studi di Napoli "Federico II", IT

- 15.00-15.45 (invited) **Jean-Louis Mergny**  
Musée National d'Histoire Naturelle, Paris, FR  
*G-quadruplexes: sequence effects and recognition by small ligands*
- 15:45-16:10 **Rui Moriyama**  
Kyushu University, Fukuoka-shi, JP  
*Chaperone activity of cationic comb-type copolymers for intermolecular DNA quadruplex*
- 16:10-16:35 **Eric Defrancq**  
University J. Fourier Grenoble 1, FR  
*Template Assisted Synthesis of G-Quadruplex (TASQ)*
- 16.35-17.00 Coffee break
- 17.00-17.45 (invited) **Rosa Di Felice**  
Istituto Nazionale di Fisica della Materia-CNR, Modena, IT  
*Simulation of G4- DNA Quadruplex*
- 17:45-18:30 (invited) **Shozeb Haider**  
University of London, UK  
*Modelling multimeric quadruplex-ligand complex*
- 18:30-18:55 **Wan Chi Lam**  
University of Ulster, Coleraine, UK  
*G-Quadruplex in the Proximal Promoter of Basic Fibroblast Growth Factor*
- 19:30-21:00 Dinner break

21.00-23:00

Free discussion

## Tuesday 23 June 2009

### Session 2B: *Biological Systems*

Chair: Jean-Louis Mergny, Musée National d'Histoire Naturelle, Paris, FR

08.30-09.15 (invited)

**Nancy Maizels**

University of Washington, Seattle, US  
*Dynamic G4 DNA in the Genome*

09.15-09.40

**Bruno Pagano**

Università di Salerno, Fisciano, IT  
*Shedding light on the interaction between TMPyP4 and human telomeric quadruplexes*

09.40-10.05

**Daniela Montesarchio**

Università degli Studi di Napoli "Federico II", IT  
*Novel G-quadruplex-based aptamers as potential anti-HIV agents*

10.05-10.30

Coffee break

10.30-11.15 (invited)

**Antonio Randazzo**

Università degli Studi di Napoli "Federico II", IT  
*G-quadruplex DNA: a new target for groove binding agents*

11:15-12:00 (invited)

**Paula Bates**

University of Louisville, US  
*G-quadruplex oligonucleotides as therapeutic agents*

12:00-12:25

**Ilse Gert Julia Manet**

ISOF-CNR, Bologna, IT  
*A combined approach to study the affinity of the antitumoral drugs Doxorubicin and Men 10755 for the G-quadruplex structure of human telomeric DNA*

12:30-15:00

Lunch break

### Session 3A *Charge transfer and ionic effects*

Chair: Alexander B. Kotlyar, Tel Aviv University, IL

15.00-15.45 (invited)

**Jeffery T. Davis**

University of Maryland, College Park, US  
*Lipophilic G-Quadruplexes as Transmembrane Ion Transporters*

15:45-16:10

**Giorgia Brancolini**

Istituto Nazionale di Fisica della Materia-CNR, Modena, IT  
*Electronic structure of DNA-modified assemblies complexed with transition*

16:10-16:35 *metal ions*  
David Gonzalez-Rodriguez  
Universidad Autónoma de Madrid, ES  
*G-quadruplex Self-assembly Regulated by Coulombic Interactions*

16.35-17.00 Coffee break

## Poster session II

Chair to be announced

17.00-19.00 Flash presentations and poster discussion

19:30 Conference Dinner

## Wednesday 24 June

### Session 3B *Charge transfer and ionic effects*

Chair: Jeffery T. Davis, University of Maryland, College Park, US

08.30-09.15 (invited) Janez Plavec  
National Institute of Chemistry, Ljubljana, SI  
*Cation localization and movement studied by NMR*

09.15-09.40 Veikko Linko  
University of Jyväskylä, FI  
*Dielectrophoretic Trapping and Electrical Conductivity of DNA Origami Structures*

09.40-10.05 Dipankar Sen  
Simon Fraser University, Burnaby, CA  
*A Contractile Electrical Switch made of DNA*

10.05-10.30 Coffee break

10.30-11.15 (invited) Alexander B. Kotlyar  
Tel Aviv University, IL  
*Synthesis and Properties of Novel Long G4-DNA-Based Nanowires*

11:15-11:40 Linda B. McGown  
Rensselaer Polytechnic Institute, Troy, US  
*Binary Guanosine Gels for Scalable Dispersion and Alignment of Single Walled Carbon Nanotubes*

11:40-12:05 Ana-Maria Chiorcea-Paquim  
Universidade de Coimbra, PT  
*Electrochemical Atomic Force Microscopy Characterisation of Guanosine and Guanine Self-Assembly onto a HOPG Electrode Surface*

12:05-12 :30                    Klemen Kunstelj  
Jozef Stefan Institute, Ljubljana, SI  
*Self-assembly process of Guanosine 5'-monophosphate on the surface*

12:05-15:00                    Lunch break

### Session 3C ***Charge transfer and ionic effects***

Chair: Janez Plavec, National Institute of Chemistry, Ljubljana, SI

15.00-15.45 (invited)        Ross Rinaldi  
Università degli Studi di Lecce, IT  
*Guanosine based nanodevices*

15.45-17.00                    Round Table

17:00-17:15                    Closing

17.15-17.45                    Coffee break

17.45-19:00                    Free discussion

19:30                            Dinner

### **Thursday 25 June**

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09:00                            Breakfast and Buses departure